

## FUTURE PERSPECTIVES OF TECHNICAL EDUCATION

DR. L. N. MITTAL

### 1. INTRODUCTION :

Since 1990, there has been mushroom growth of Technical Education at all levels. Infact, there is competition between State Governments to increase facilities of technical education at degree, diploma and certificate levels. Though from social point of view, it is a welcome sign but mass scale expansion of technical education has created number of other problems like :

- (i) Sub-standard output from the system of technical education due to lack of infrastructure (physical, human and informational) and greater focus of teaching-learning process on memorization and bookish knowledge.
- (ii) Lack of confidence in the passouts from the system about problem-solving and diagnostic skills which form the nucleus of any work place.
- (iii) Mismatch between supply and demand leading to increased unemployment at different levels etc.

Government of India, Ministry of

Human Resource Development has been making continuous efforts of its own and through World Bank Assisted Projects for providing financial assistance to States for improving the system of technical education. Statutorisation of the AICTE; launching quality improvement programmes for upgrading knowledge and skills of teachers; partnership between industry and institutes; autonomy to technical institutions; removal of obsolescence in physical resources; establishment of National Technical Management Information System (NTMIS); number of collaborative projects with developed countries etc. are some of the important interventions.

Though above interventions have brought some improvements in selected institutions, but the aide-memories of World Bank Assisted Project indicate marginal satisfaction.

### 2. CHALLENGING TIMES AHEAD :

Due to liberalization of economy, national and international competition will be on the increase in the manufac-

Professor & Head, Curriculum Development Centre, TTTI, Chandigarh.

turer and service sectors. Computerization, automation and miniaturization will be technology upgradation dimensions. In the world of work, survival of the fittest will be called upon. Under above circumstances, what should be done to improve the technical education system ?

### 3. FUTURE PERSPECTIVES :

Following are some of the suggestions to face the challenge of technical manpower development in the context of liberalization of economy :

#### (a) Functioning of the AICTE :

The role of AICTE is planning, promoting and regulating technical education in the country. AICTE should take strong measures for not allowing mushroom growth of technical institutions particularly at degree and diploma levels and should accreditate only those institutions which have necessary physical, human and informational resources. Consolidation of existing technical institutions is the need of the day. Existing programmes should take care of emerging areas of technology, rather than starting new programmes. Ban should be imposed for next five years. Efforts should be made to convert the existing government technical institutions into autonomous institutions, in a phased manner.

Further, the intake into various programmes will have to be reduced. For effective conduct of theory or tutorial or practical classes, the group size should not

exceed 20. This will facilitate teachers in providing appropriate learning experiences to students without dividing them into separate compartments of theory and practice.

#### (b) Teacher Development :

Though considerable efforts have been made in offering variety of programmes to train and retrain technical teachers but systematic faculty development has yet to take root at the institute level. Faculty development should be viewed by considering professional and career growth development of individual teachers for which, heads of institutions / departments will have to shoulder greater responsibility.

Mandatory induction programme in curriculum processes, educational technology, education research, information technology, resource utilization etc.; initial industrial training of new teachers and linking M.E. and Ph.D. thesis with the world of work; training of teachers in making use of computer software for various engineering applications; subject matter updating courses; and training the faculty in organizing practical work, project work etc. should be considered as essential requirement of training and retraining of faculty working in the technical institution.

#### (c) Role of Principals/Heads of Department :

The role of these key level positions should be the management of physical, human, informational and financial resources for effective cur-

riculum implementation (so as to provide varied learning experiences to the students like graded tutorial experiences; home assignments linked with professional life; graded laboratory and workshop experiences to develop manual and machining skills operative and analytical skills; well thought out project work for developing abilities of analysis, synthesis and evaluation etc.) for developing desired competencies in the students, leading to their gainful employment.

Employment of students should be the key factor for determining the effectiveness of Technical Institutions. For this purpose, Principals at the institute level and Heads of department at the department level will have to establish meaningful linkages with the world of work for building the reputation of the institutions by inviting top level executives to the institutes, organizing continuing education programmes for people working in the industry, solving their technical problems and demonstrating the capabilities of their students by undertaking project assignments related to industrial needs.

Further, the Principals/HODs will have to encourage innovations and developments by the faculty and students.

**(d) Offering Programmes on Cooperative Education Basis :**

In the fast changing technological scenario at work places, it would be

practically impossible to keep pace with the developments by adding more and more infrastructure in the technical institutes. It would be desirable that in the times to come, specific group of industries will be called upon to collaborate with a technical institute in the design of curriculum and its implementation. A plan of mutual collaboration has got to be worked out for sharing physical, human and information resources for mutual benefit. While offering programmes on cooperative basis, 'Concept of Use' i.e. transfer of knowledge and skills gained in the institutions and its transfer to solve practical problems of world of work by the students by undertaking minor and major project assignments in cooperative organizations is the key to success and should form essential component of all technical programmes. Cooperative programmes will also enhance the employability of students.

**(e) Teaching - Learning Process :**

The present system of teaching-learning in the majority of technical institutions is highly teacher centered. The shift must take place for student centred learning by way of laying greater emphasis on tutorial assignments, well planned laboratory and workshop experiences and learning through project assignments. This will indeed require extensive training of teachers. Preparation of appropriate learning resources will also be an important

educational implication.

**(f) Examination System :**

Teaching - learning process in any institute depends on the type of examination system. The thrust of today's examination system is primarily on memory oriented learning. Examination of students should focus on level of competencies developed in the students. The present paper and pencil type examination will have to be substituted by well organized objective type questions, short answer questions, project oriented examination followed by viva voce examination by experts from industry and faculty of technical institute. Continuous assessment of students' performance will have to be organized more seriously than the present practices.

**4. CONCLUSION :**

Keeping in view globalization of Indian economy, reshaping technical education system to produce world class technical manpower will be called upon to face the challenges of technology upgradation. Conventional approaches of manpower development through closed system of technical institutions should be questioned. It will be necessary to understand the 'Concept of Use' and its application in the teaching -

learning process to produce engineers possessing abilities of transferring knowledge and skills acquired to solve practical problems by laying emphasis on thinking and problem - solving. Domains of learning and particularly, development of learning-to-learn skills, problem-solving skills, interpersonal and communication skills and proficiency in making use of computers for various engineering applications will have to be given greater emphasis. This will enable technical human resources to possess acquisitive, adaptive, operative and innovative capabilities to face the challenge.

**5. REFERENCES :**

- (i) Mitra and Associates (1986) : Challenge and Response - Towards a New Education Policy and Beyond; Wiley Eastern Limited, New Delhi.
- (ii) Mittal LN (1992) : Interactive Networking for Polytechnic Industry Interface - A System's Design; Ph.D. Thesis.
- (iii) Mittal and etal (1999) : Curricula Development for Polytechnics; TTTI, Chandigarh.
- (iv) Agrawal, DP and Raina, KB (1998) : Improving Quality of Technical Education; Journal of Engineering Education Vol. XII. Nov. 2, Oct. 1998.

★